

THERE IS CLAIMED:

1. A system for monitoring the cleaning of process chambers and vacuum lines, said system including a source of a test plasma, spectral emission measuring means receiving light from said test plasma, means for analyzing signals obtained from said spectral emission measuring means to determine the nature of the atoms present in said test plasma, and means for alternately exposing a sample of a process chamber or vacuum line inside surface to be monitored either to the gas inside said process chamber or vacuum line or to said test plasma from said test plasma source.
2. The system claimed in claim 1 wherein said surface sample to be analyzed is mobile, assuming a first state oriented toward the interior of said process chamber or vacuum line in order to be exposed to the gases in said process chamber or vacuum line and assuming a second state oriented toward the exterior of said process chamber or vacuum line and facing said test plasma source in order to be exposed to said test plasma.
3. The system claimed in claim 2 wherein said test plasma source includes a sealed quartz tube having an end that communicates with said process chamber or vacuum line to be tested and a wall through which light propagating from said test plasma to said spectral emission measuring means passes.
4. The system claimed in claim 1 wherein said test plasma source is connected to said spectral emission measuring means by a flexible optical fiber allowing movement of said plasma source which is movable in said process chamber or vacuum line between a first state away from said surface sample to be analyzed in order so that the gases in said process chamber or vacuum line act on said surface sample to be analyzed and a second state facing said surface sample to be analyzed so that said test plasma acts on said surface sample to be analyzed.
5. The system claimed in claim 1, further including control means for receiving from said analysis means information relating to the nature of the atoms present in said test plasma in order to command continuation of said cleaning step for as long as said atoms present include atoms of deposits and to interrupt said cleaning step as soon as said atoms

- present no longer include atoms of deposit.
6. A method of cleaning process chambers or vacuum lines, said method including a cleaning step using one or more cleaning gases for decomposing deposits on interior walls of said process chambers or vacuum lines and one or more intermediate monitoring steps in which, using a monitoring system as claimed in any one of claims 1 to 5, the presence of atoms of deposit on at least a sample of an inside wall of said process chamber or vacuum line to be cleaned is detected by causing a test plasma to act on said deposit on said surface sample.
 7. The method claimed in claim 6 wherein said intermediate monitoring steps are carried out at predetermined times.
 8. The method claimed in claim 7 wherein said predetermined times are chosen to be near a foreseeable end of cleaning time.